

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking to consider policy and implementation refinements to the Energy Storage Procurement Framework and Design Program (D.13-10-040, D.14-10-045) and related Action Plan of the California Energy Storage Roadmap.

Rulemaking 15-03-011  
(Filed March 26, 2015)

**COMMENTS OF CALPINE CORPORATION ON THE ISSUE PAPER ON MULTIPLE-  
USE APPLICATIONS AND STATION POWER FOR ENERGY STORAGE**

Matthew Barmack  
Director, Market and Regulatory Analysis  
Calpine Corporation  
4160 Dublin Blvd.  
Dublin, CA 94568  
Tel. (925) 557-2267  
Email: barmackm@calpine.com

Patrick Ferguson  
Davis Wright Tremaine LLP  
505 Montgomery Street, Suite 800  
San Francisco, CA 94111-6533  
Tel. (415) 276-6500  
Email: patrickferguson@dwt.com

Attorneys for Calpine Corporation

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Pursuant to the April 22, 2016 *Administrative Law Judge’s Ruling Noticing Workshop, Jointly Led by the California Independent System Operator and the California Public Utilities Commission and Setting a Comment Schedule* (“ALJ Ruling”), Calpine Corporation (“Calpine”) submits the following comments on the questions set forth in the ALJ Ruling and the attached issue paper, entitled “Joint Workshop on Multiple-Use Applications and Station Power for Energy Storage CPUC Rulemaking 15-03-011 and CAISO ESDER 2 Stakeholder Initiative Issue Paper” (the “Issue Paper”).

**I. INTRODUCTION**

Calpine appreciates the opportunity to comment on the Issue Paper. Calpine attended the workshop jointly lead by the California Independent System Operator (“CAISO”) and the California Public Utilities Commission (“Commission”). Dr. Barmack participated as a member of the panel on station power issues. Consequently, Calpine’s comments focus primarily on the questions in the ALJ Ruling related to station power. With respect to multiple-use applications, Calpine requests greater attention to the double- or over-compensation issues associated with paying behind-the-meter resources through retail demand charges. Lastly, Calpine proposes a minor clarification to the Issue Paper.

## II. ALJ RULING QUESTIONS<sup>1</sup>

### **Multiple-Use Applications**

- 4. Are there any concerns of overlap between wholesale, distribution and retail services that must be addressed? Which of these services are currently compensated? Does each service provide incremental value? Are there double payment concerns that must be addressed? How should costs and benefits of the same resource serving across the grid be tracked and allocated?**

Calpine is concerned about the potential for double compensation stemming from: (1) the implicit compensation through avoided demand charges at the retail level; and (2) additional compensation at the distribution level or through wholesale markets. Demand charges generally reflect avoided distribution and generation capacity costs. Consequently, behind-the-meter storage may enable a customer to avoid generation capacity costs that are recovered through volumetric energy charges or demand charges, while also receiving a duplicative wholesale payment for Resource Adequacy/generation capacity. In particular, there is a significant potential for double payments associated with behind-the-meter storage resources that are also participating in wholesale markets.

The CAISO has tried to address these types of double-payment issues in its stakeholder initiatives,<sup>2</sup> but they require more comprehensive treatment. Double-payment issues potentially apply to all behind-the-meter resources, not just behind-the-meter storage; thus, as Calpine noted

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<sup>1</sup> Calpine does not offer comments on a number of the questions set forth in the ALJ Ruling. For ease of reference, Calpine's comments maintain the question numbering set forth in the ALJ Ruling.

<sup>2</sup> See e.g., Section 6.2 of California ISO, *Energy Storage and Distributed Energy Resources (ESDER) Stakeholder Initiative, Draft Final Proposal* (November 2, 2015), available at <https://www.caiso.com/Documents/DraftFinalProposal-EnergyStorageandDistributedEnergyResources.pdf>.

in its comments on the Scoping Memo, it might be best to address this double payment issue in a proceeding focused on multiple behind-the-meter resources.<sup>3</sup>

### **Station Power - New Equipment and Loads Introduced by Storage**

- 1. What loads related to energy storage must be considered that are not clearly addressed in existing station power provisions? Considering these, what principles should apply to determine whether they should be categorized as station power versus wholesale consumption for resale?**

Load that is associated with the operation of an energy storage facility is not distinguishable from load for which conventional generators are charged for station power. Even storage charging, which many parties seem to believe should be billed at a wholesale rate, is not fundamentally different from a conventional generator's use of grid power to start a plant. As Calpine described in its workshop presentation, a typical conventional power plant draws significant power from the grid during a start.<sup>4</sup> This power is converted to mechanical energy which is used to start a plant so that the plant can return power to the grid after it is started. Thus, the grid power used to start a conventional power plant is effectively stored.

Two general principles should guide the Commission and CAISO's assessment of which types of station power loads should be charged a wholesale or retail rate. *First*, all loads associated with the provision of wholesale electric products should be charged a wholesale rate. *Second*, regardless of whether a particular type of load is considered wholesale or retail, such load should be treated uniformly across technologies to avoid undue discrimination (i.e. load should be treated the same for conventional generation and for different storage technologies).

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<sup>3</sup> Comments of Calpine Corporation on Assigned Commissioner and Assigned Administrative Law Judge's Scoping Memo and Ruling Seeking Party Comments on Track 2 Issues, at 6.

<sup>4</sup> See Calpine workshop presentation, at 6, available at <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11264>.

As Calpine illustrated in its workshop presentation, the vast majority of station power load for conventional generation is associated with generating power or preparing to generate power. Other station power loads associated with, for example, offices that happen to be co-located with a generating plant are generally small.<sup>5</sup> Consequently, Calpine believes that all station power load for conventional generation should be charged a wholesale rate. The same principle should likely apply to in-front-of-the-meter storage. Calpine acknowledges that the treatment of behind-the-meter storage may be more complicated because it could be more difficult to distinguish loads associated with the operation of storage from other co-located loads, which may be large relative to loads associated with operating storage. In addition, to the extent that the energy storage facility is used to provide retail services (*e.g.*, avoiding demand charges), it is not providing wholesale electric products and should not be charged a wholesale rate.

With respect to uniformity across technologies, there are many loads associated with energy storage that are similar to loads associated with the operation of conventional generation. For example, a conventional power plant may operate pumps for cooling even when the plant is not generating power. This type of load is similar to the loads associated with heating and cooling systems for energy storage systems, such as the heating and cooling systems integrated into lithium-ion or sodium sulfur storage systems. To avoid undue discrimination, Calpine requests similar treatment for energy storage and conventional generation, regardless of whether any particular types of loads are treated as retail or wholesale.

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<sup>5</sup> See Calpine workshop presentation, at 4.

**2. Should battery temperature regulation be considered part of charging (similar to efficiency loss) and subject to a wholesale rate, or should it be considered consumption/station power subject to a retail rate (where consumption exceeds output in an interval)? If the latter, how should temperature regulation be accounted for or metered?**

As indicated above, at least for in-front-of-the-meter storage facilities, Calpine believes that all station power use should be billed at a wholesale rate. Calpine shares the concerns that LS Power raised during the workshop that energy storage systems have different critical station power loads depending on the type of energy storage technology. Thus, differentiating between aspects of the station power loads associated with different energy storage technologies could arbitrarily favor certain technologies over others.<sup>6</sup>

At the workshop, it was noted that sodium sulfur batteries require significant heating in order to maintain their efficiency while lithium-ion batteries require limited cooling. Charging for battery temperature regulation at a retail rate could lead to undue discrimination between technologies such as sodium sulfur and lithium ion batteries that use different amounts of power for temperature regulation. For example, consider two technologies: (1) a storage system that has a round-trip efficiency of 80% and requires no additional power for temperature regulation; and (2) a storage system that can achieve a round-trip efficiency of 85% by using station power for temperature regulation, with the use of station power effectively reducing the efficiency of the resource to 80%. Despite the equivalent round-trip efficiency of the second system after accounting for the use of station power for temperature regulation, it may appear more costly if it is charged a retail rate for temperature regulation.

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<sup>6</sup> LS Power, Presentation at May 2, 2016 Workshop: Station Power For Energy Storage, *available at* <http://www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=11267>.

**3. Do station power rules apply to BTM storage and do they differ from IFOM storage?**

To the best of Calpine's knowledge, station power rules do not generally apply to behind-the-meter storage but they do apply to in-front-of-the-meter storage. As noted above, it may be more complicated to apply station power rules to behind-the-meter storage because it could be more difficult to distinguish loads associated with the operation of storage from other co-located loads, which may be large relative to loads associated with charging storage.

**III. PROPOSED CLARIFICATION TO THE ISSUE PAPER**

Calpine requests one minor clarification to the Issue Paper. Section 2.1 of the Issue Paper presents rules and guidelines for station power. When discussing the CAISO station power rules, the Issue Paper could be construed to suggest that the CAISO's tariff currently governs how station power is metered and billed to the extent that it is not netted. In fact, station power use in excess of the amount that is netted is currently billed and metered according to the Investor Owned Utilities' ("IOUs") Commission-approved retail tariffs. The sections of the CAISO tariff cited in the Issue Paper<sup>7</sup> only affect how a generator settles with the CAISO for sales of electricity net of station power load.

With respect to the description of the Commission's rules on station power in Section 2.1.2, it should also be noted that the IOUs' current tariffs allow for 15-minute netting, which is the same netting rule that was used in the IOUs' tariffs (i.e. the Otherwise Applicable Tariffs) prior to the implementation of the CAISO's Station Service Protocol.<sup>8</sup> While the IOUs' current station power tariffs do not explicitly state that 15-minute netting applies to station power,

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<sup>7</sup> See Issue Paper, at 10 (fn. 10) (citing to Sections 10.1.3, 10.2.9.2, and 10.3.2.2 of the CAISO tariff).

<sup>8</sup> See Southern California Edison Company's ("SCE") Schedule SPSS, Station Power Self-Supply; San Diego Gas & Electric Company's ("SDG&E") Schedule SPSS, Station Power Self-Supply; Pacific Gas & Electric Company's ("PG&E") Electric Schedule S – Standby Service.

generators are typically billed in 15-minute increments and hence are able to net within each 15-minute interval. To avoid any confusion, Section 2.1 of the Issue Paper should be adjusted to:

(a) clarify the relevance of the CAISO's station power rules; and (b) note that the IOUs' station power tariffs, as currently implemented, allow for 15-minute netting.

Respectfully submitted,

/s/

Matthew Barmack  
Director, Market and Regulatory Analysis  
CALPINE CORPORATION  
4160 Dublin Blvd.  
Dublin, CA 94568  
Tel. (925) 557-2267  
Email: barmackm@calpine.com

Patrick Ferguson  
DAVIS WRIGHT TREMAINE LLP  
505 Montgomery Street, Suite 800  
San Francisco, CA 94111-6533  
Tel. (415) 276-6500  
Email: patrickferguson@dwt.com

Attorneys for Calpine Corporation

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